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passes from perihelion to aphelion and back. Considering the real form of the moon's orbit in relation to the sun and to the earth and its distances from each, and the very small angles of eight minutes formed at the sun by the radius of its orbit at its quadratures, and of one minute at its syzigies, it does not seem that such inequalities can be mere disturbances of the moon's orbit by the central force of the sun.

4. This force would seem also to require a change in the mode of calculating cosmical disturbances. Instead of starting us from the basis of an ideal ellipse, depending on a transient force of unknown quantity, it gives us real ones depending on a constant force for each case, which may be calculated. The forms thus given must be the true normal forms of the respective orbits, and departures from them must alone be treated as disturbances.

I have only to add that, however unsatisfactory it always is to eliminate any element of a system by declaring it anomalous, yet I do not see how this is to be avoided in relation to the satellites of Uranus, if the observations reported about them are accurate.

Stated Meeting, October 1, 1869.

Present, twenty-two members.

Prof. CRESSON, in the Chair.

A letter accepting membership was received from Linant Bey, dated Cairo, April 20, 1860.

An extract from a letter from M. Carlier to Mr. Durand respecting the Michaux Legacy was read.

An extract of a letter from Mr. Lesquereux to the Secretary respecting Mr. Schimper's Palæontologie Végétale was read.

Donations for the Library were received from M. Linant de Bellefonds Bey, the British Association, the London Geological Society, Mr. Gore, F. R. S., and the Boston and Montreal Natural History Societies.

The death of Dr. Dorr, member of this Society, at Germantown, Sept. 18, aged 73 years, was announced by Mr. Fraley.

Prof. Mayer laid before the Society an abstract of the photographic observations of the total eclipse of the 7th of August at Burlington, Iowa, with numerous photographic plates and illustrations.

Prof. McClune exhibited a drawing of the appearance of the Sun to the naked eye made by Prof. Gummere and himself, and described some of the phenomena of the eclipse.

Prof. Morton exhibited a copy of the photograph picture got by Mr. Whipple in 40 seconds, for Prof. Pierce's party of observation; the object being to obtain by a longer exposure than usual with sun pictures, an image of the corona. Photographs of the protuberances required but 5 to 16 seconds; those of the sun before total immersion were exposed but the one 500th of a second, a narrow slit in a flying trap-cover serving to sweep a beam of light across the plate.

Mr. Chase gave the results of his further discussion of Mr. Dines' weather records in England.

Pending nominations 627–642 were read.

And the Society was adjourned.

TIDAL RAINFALL BY P. E. CHASE.

Since the publication of my paper on the Tidal Rainfall of Philadelphia, (Proc. A. P. S. v. x, pp. 523–537), Mr. Dines has continued his discussion of "the moon's influence upon the fall of rain" (Proc. Meteorolog. Soc. for April 21, 1869), adding forty years' observations at Chiswick to those at Cobham, which he had previously examined.

The evidences which I have adduced of "establishments" in the tidal rainfall, and of more strongly marked characteristics in low latitudes, forbid any general inferences from observations at two stations which are so near each other, and in so high a latitude as Cobham and Chiswick. But my study of laws that have been developed by records at more than a hundred different observatories, in Europe, Asia and America, led me to look for additional confirmation of those laws even in the valuable abstracts which rendered Mr. Dines so skeptical. I accordingly "smoothed" the irregularities, both in the Cobham and in the Chiswick tables, and arranged and treated in a similar manner President Caswell's observations at Providence, R. I., from December 1831, to May 1860, and the Toronto observations from March 1840, to January 1849. The results are given in the following Tables.